

(1) 添加列

- 单列—ALTER TABLE tab_name ADD [COLUMN] col_name column_definition [FIRST | AFTER col_name]
- 多列—ALTER TABLE tab_name ADD [COLUMN] (col_name column_definition,...)

```
mysql> create table tab(
-> id tinyint primary key auto_increment,
-> username varchar(20)
Query OK, 0 rows affected (0.03 sec)
|
mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> alter table tab add password tinyint;
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> alter table tab add (sex smallint,salary smallint);
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| salary | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)

mysql> alter table tab add career varchar(20) first;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| career | varchar(20) | YES | | NULL | |
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| salary | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> alter table tab add age tinyint after password;
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| career | varchar(20) | YES | | NULL | |
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| age    | tinyint(4) | YES | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| salary | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)
```

(2) 删除列

- ALTER TABLE tab_name DROP [COLUMN] col_name column_definition,DROP ... (index_col_name,...); 约束标记 索引类型

```
mysql> alter table tab drop career;
Query OK, 0 rows affected (0.09 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| age    | tinyint(4) | YES | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| salary | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql> alter table tab drop age,drop sex;
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| salary | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table tab add sex int,drop salary;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from tab;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(4) | NO | PRI | NULL | auto_increment |
| username | varchar(20) | YES | | NULL | |
| password | tinyint(4) | YES | | NULL | |
| sex    | int(11) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

(3) 修改约束

- 主键约束—ALTER TABLE ta_name ADD [CONSTRAINT[symbol]] PRIMARY KEY [index_type] (index_col_name,...); 约束标记 索引类型

```
mysql> create table user(
-> username varchar(20) not null,
-> sex smallint);
Query OK, 0 rows affected (0.04 sec)

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> alter table user add id smallint unsigned;
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> alter table user add primary key(id);
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | NO | PRI | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

- 唯一约束—ALTER TABLE ta_name ADD [CONSTRAINT[symbol]] UNIQUE [index_name] [index_type] (index_col_name,...);

```
mysql> alter table user add unique(username);
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | UNI | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | NO | PRI | NULL | |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

- 外键约束—ALTER TABLE ta_name ADD [CONSTRAINT[symbol]] FOREIGN KEY (index_col_name,...) reference_definition;

```
mysql> create table person(
-> id smallint primary key auto_increment);
Query OK, 0 rows affected (0.08 sec)

mysql> alter table user add pid smallint;
Query OK, 0 rows affected (0.05 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | UNI | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | NO | PRI | NULL | |
| pid    | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table user add foreign key (pid) references person(id);
Query OK, 0 rows affected (0.09 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show create table user;
+-----+-----+-----+-----+-----+-----+
| Table | Create Table
+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+
| user | CREATE TABLE `user` (
  `username` varchar(20) NOT NULL,
  `sex` smallint(6) DEFAULT NULL,
  `id` smallint(5) DEFAULT NULL,
  `pid` smallint(5) DEFAULT NULL,
  PRIMARY KEY (`id`),
  UNIQUE KEY `username` (`username`),
  KEY `pid` (`pid`)
  CONSTRAINT `user_ibfk_1` FOREIGN KEY (`pid`) REFERENCES `person` (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

- 默认约束—ALTER TABLE ta_name ALTER[COLUMN] col_name (SET DEFAULT litera | DROP DEFAULT);

```
mysql> alter table user alter sex set default 15;
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | UNI | NULL | |
| sex    | smallint(6) | YES | | 15 | |
| id    | smallint(5) unsigned | NO | PRI | NULL | |
| pid    | smallint(6) | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table user alter sex drop default;
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | UNI | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | NO | PRI | NULL | |
| pid    | smallint(6) | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

(4) 删除约束

- 删除主键约束—ALTER TABLE tb_name DROP PRIMARY KEY;

```
mysql> alter table user drop primary key;
Query OK, 0 rows affected (0.10 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | PRI | NULL | |
| sex    | smallint(6) | YES | | NULL | |
| id    | smallint(5) unsigned | NO | | NULL | |
| pid    | smallint(6) | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

- 删除唯一约束—ALTER TABLE tb_name DROP (INDEX | KEY) index_name;

```
mysql> alter table user add unique(sex);
Query OK, 0 rows affected (0.01 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | PRI | NULL | |
| sex    | smallint(6) | YES | UNI | NULL | |
| id    | smallint(5) unsigned | NO | | NULL | |
| pid    | smallint(6) | YES | MUL | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table user drop index sex;
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| username | varchar(20) | NO | PRI | NULL | |
| id    | smallint(5) unsigned | NO | | NULL | |
| pid    | smallint(6) | YES | MUL | NULL | |
| sex    | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> alter table user drop foreign key user_ibfk_1;
Query OK, 0 rows affected (0.08 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show create table user;
+-----+-----+-----+-----+-----+-----+
| Table | Create Table
+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+
| user | CREATE TABLE `user` (
  `username` varchar(20) NOT NULL,
  `id` smallint(5) DEFAULT NULL,
  `sex` smallint(6) DEFAULT NULL,
  `pid` smallint(6) DEFAULT NULL,
  UNIQUE KEY `username` (`username`),
  KEY `pid` (`pid`)
  CONSTRAINT `user_ibfk_1` FOREIGN KEY (`pid`) REFERENCES `person` (`id`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)
```

- 删除外键约束—ALTER TABLE tb_name DROP FOREIGN KEY fk_symbol;删除外键约束 (先找到外键的symbol, 按这个删除外键, 再DROP INDEX)

```
mysql> show create table user;
+-----+-----+-----+-----+-----+-----+
| Table | Create Table
+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+
| user | CREATE TABLE `user` (
  `username` varchar(20) NOT NULL,
  `id` smallint(5) unsigned NOT NULL,
  `pid` smallint(6) DEFAULT NULL,
  `sex` smallint(6) DEFAULT NULL,
  UNIQUE KEY `username` (`username`),
  KEY `pid` (`pid`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

- 修改列定义(列名或者位置)—ALTER TABLE tb_name MODIFY [COLUMNS] col_name column_definition [FIRST | AFTER col_name];

```
mysql> alter table user modify id smallint unsigned not null first;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show create table user;
+-----+-----+-----+-----+-----+-----+
| Table | Create Table
+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+
| user | CREATE TABLE `user` (
  `id` smallint(5) unsigned NOT NULL,
  `username` varchar(20) NOT NULL,
  `pid` smallint(6) DEFAULT NULL,
  `sex` smallint(6) DEFAULT NULL,
  UNIQUE KEY `username` (`username`),
  KEY `pid` (`pid`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.00 sec)

mysql> alter table user modify id tinyint unsigned not null first;
Query OK, 0 rows affected (0.12 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show create table user;
+-----+-----+-----+-----+-----+-----+
| Table | Create Table
+-----+-----+-----+-----+-----+-----+
|
+-----+-----+-----+-----+-----+-----+
| user | CREATE TABLE `user` (
  `id` tinyint(3) unsigned NOT NULL,
  `username` varchar(20) NOT NULL,
  `pid` smallint(6) DEFAULT NULL,
  `sex` smallint(6) DEFAULT NULL,
  UNIQUE KEY `username` (`username`),
  KEY `pid` (`pid`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
+-----+-----+-----+-----+-----+-----+
1 row in set (0.01 sec)
```

- 修改列名称—ALTER TABLE tb_name CHANGE [COLUMNS] old_col_name new_col_name column_definition [FIRST | AFTER col_name]; (不仅修改列的定义, 还可以改名)

```
mysql> alter table user change pid p_id smallint not null;
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> show columns from user;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id    | tinyint(3) unsigned | NO | | NULL | |
| username | varchar(20) | NO | PRI | NULL | |
| p_id  | smallint(6) | NO | MUL | NULL | |
| sex    | smallint(6) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

(6) 修改数据表名称

- 修改数据表名称—ALTER TABLE tb_name RENAME [TO|AS] new_tb_name;
- RENAME TABLE tb1_name TO new tb1_name [,tb2_name TO new tb2_name];

```
mysql> ALTER TABLE users2 RENAME users3;
Query OK, 0 rows affected (0.04 sec)

mysql> SHOW TABLES;
+-----+
| Tables_in_test |
+-----+
| province |
| tab |
| users |
| users1 |
| users3 |
+-----+
11 rows in set (0.00 sec)

mysql> RENAME TABLE users3 TO users4;
Query OK, 0 rows affected (0.05 sec)
```